

Climate Monitoring Program (CM) FY 2017 Information Sheet

Observations are a foundational element of the climate research and services enterprise. NOAA and its national and international partners invest significantly in the development of a global climate observing system to address the needs of the research, forecasting, and assessment communities, as well as enable stakeholders and decision-makers to monitor and respond to changes in the Earth system. While observing systems routinely provide data and related metadata, raw data alone are often insufficient to realize the full value of these observations. Carefully developed and tailored value-added climate products based on these data can improve the connection between observations and their application within the climate enterprise. Such products should have a strong scientific foundation and be publicly accessible. The climate monitoring (CM) program within the Climate Observation Division (COD) focuses on the development and improvement of climate-related data sets, the transformation of climate-related observations into informative products, and the interpretation of these products to better understand the current and changing state of the climate system. Climate Monitoring supports research that creates authoritative, tailored climate products and information for various stakeholders.

In FY17, the Climate Monitoring program is soliciting research proposals for the following two competitions that will produce observation –based products or indices around two topics: (1) Ocean Climate Information and (2) Global Climate Indicators and Data for Assessment. This call for proposals does not include support for field measurements in either of these competitions. Projects for both Competitions should be at a funding level between \$75,000 - 150,000 per year. Two or three year proposals are requested for Competition 1. Proposals of one or two years are requested for Competition 2.

COM 1: Ocean Climate Information for the Scientific Community

Value-added Ocean Climate Products

While observing systems routinely provide data and related metadata, raw data alone are often insufficient to realize the full value of these observations. Within the Climate Observation Division (COD), one of the roles of the Climate Monitoring program is to support carefully developed and tailored value-added climate products and indices of observed climate variability and change on global to regional scales. These products add value and context to the wide range of observations supported by the Division. and provide critical information to stakeholders and decision makers that need to monitor and respond to changes in earth's climate.

Projects are solicited that utilize clean observing assets from NOAA (<http://cpo.noaa.gov/ClimatePrograms/ClimateObservation.aspx>) and others to create global or regional ocean indices or products targeted toward the scientific community to advance the monitoring and understanding of large-scale features and variability of the ocean climate system, and contribute to better understanding the important two-way relationship between the world's oceans and climate.

Target Stakeholders: The Climate research community

COD's observations and products seek to meet the needs of wide variety of stakeholders. This call specifically seeks products that provide information on essential ocean variables (e.g. <http://ioc-goos-oopc.org/obs/ecv.php>) tailored to research investigations and scientific monitoring. Example targets could be (1) Monitoring key variables to inform the understanding of regional ocean variability and/or change (2) identifying and characterizing model biases critical for diagnosing changes in climate-relevant features. Development of indices that focus on variables as part of a short-term process study are not suitable for this call. New indices that use long term ocean records and/or synthesize these with new and multiple data sources are encouraged. Proposers are encouraged to review the current set of pilot ocean indicator projects funded by the program in FY14:

<http://cpo.noaa.gov/ClimatePrograms/ClimateObservation/ClimateMonitoring/Fundedprojects.aspx>. Projects should identify a research stakeholder/ user community in the proposal and include a discussion of how the community will be involved in the process by which the products will developed, evaluated, and made accessible.

Criteria for Product Evaluation

Successful proposals will address the following criteria:

- (1) Indices or products created will address or inform one or more of the Climate Observation Division's Guiding Questions for Observing and Monitoring (COD Strategic Plan, p.5, [http://cpo.noaa.gov/sites/cpo/COD2/COD%20Strategic%20Plan_June2015_publicdraft%20\(1\).pdf](http://cpo.noaa.gov/sites/cpo/COD2/COD%20Strategic%20Plan_June2015_publicdraft%20(1).pdf)).
- (2) Proposals should clearly show a pathway by which information gained from these projects would benefit a particular set of stakeholders (e.g. forecasting or decision making).
- (3) Projects will identify a scientific stakeholder community or research partner that will form the user community for the data. Partnerships beyond the PI's own research group are strongly recommended; and collaborations with modeling groups are particularly encouraged. Projects must include an engagement and dissemination plan that will describe explicitly how research results and products will be evaluated by and provided to the broader scientific community. A

representative from that stakeholder community should be included in the proposal as a co-PI or collaborator (as appropriate).

- (4) Projects will document a pilot activity demonstrating the application of proposed indice information
- (5) PIs will be expected to work with NOAA, JCOMM, GOOS, and others to make these products accessible and update them routinely (include 1 trip per year to an international meeting to coordinate indices work). Successful indices that have demonstrated value and use to the scientific community by the end of the project may be continued beyond the proposal period.

COM 2: Global Change Climate Indicators and Data Products for Enhanced Understanding

Supporting the USGCRP Sustained Assessment Process

NOAA is a major contributor to U.S. National Climate Assessment (NCA) (<http://nca2014.globalchange.gov>), a central member of the U.S. Global Change Research Program (USGCRP), and intends to continue supporting future NCA activities. Projects are solicited through this competition to develop and test indicators which could provide a clear and concise way of communicating to the public and decisionmakers the status and trends of physical drivers of the climate system as part of the USGCRP Indicators system (<http://www.globalchange.gov/explore/indicators>). These indicators enable continued monitoring of climate change and variability as part of a sustained assessment process.

National Climate Assessments (NCA) analyze historical trends in global change and project major trends for the subsequent 25 to 100 years, covering physical, chemical, biological, and social systems. These Assessments provide integrated analyses of impacts and vulnerability to climate change, addressing both specific sectors (i.e., natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity) and geographical regions. The Indicators program is meant to supplement these periodic assessments by providing sustained information between NCAs.

We are soliciting proposals for the development and testing of potential climate indicators that address the needs expressed in the NCA vision for a national system of indicators. This vision was developed over a series of workshops on ecological, physical, and societal indicators in 2010 (ecological) and 2011 (physical, societal). Links to these workshop reports and other NCA workshops may be found on the NCA

website¹. A summary report on the indicator system development describes the process and recommends a set of potential indicators for inclusion in the system².

Priorities areas for Indicator Development

Projects proposed in response to this competition will concentrate on physical climate indicators, particularly those that are built upon NOAA's observing and data assets. Indices should be scientifically and societally relevant – examples include temperature trends throughout the atmosphere and ocean, sea level, and climate-related changes in marine and coastal environments – and be able to clearly document a connection between the metric/variable and climate variability and change. Indicators must be aligned with one of NOAA's broad societal challenge areas: (a) climate impacts on water resources, (b) coasts and climate resilience, (c) sustainability of marine ecosystems, and (d) changes in extremes of weather and climate. This solicitation will prioritize Indicators that enhance the Climate and Observation Monitoring program's foci of ocean climate, Arctic issues, and climate extremes.

Indicator Criteria

Successful proposals will develop indicators that:

- (1) Explicitly address needs or gaps in the USGCRP Indicators pilot³. Proposers should consult the USGCRP reports Developing Indicators of Climate Change⁴ and the Physical Climate Indicators workshop report⁵.
- (2) Must be able to be tracked over time using federally-sourced data currently available and/or expected to be available in the future. Indicators may be related to a single environmental variable, or could consist of several aggregated variables. Indicators that draw exclusively or largely on NOAA data or products will be prioritized.
- (3) Can be readily incorporated into the USGCRP system. Potential indicators should assess their readiness against the criteria established by the US Environmental Protection Agency for Climate Change Indicators⁶.
- (4) Can be useful by those who will be drawing on the NCA to make decisions related to impacts, adaptation, vulnerability, and mitigation associated with climate and global change. Projects that directly involve user groups or stakeholder communities in testing or assessment of the indicators are preferred.

¹ <http://www.globalchange.gov/what-we-do/assessment/nca-activities/workshopand-meeting-reports>

² <http://www.globalchange.gov/what-we-do/assessment/nca-activities/workshopand-meeting-reports>

³ <http://www.globalchange.gov/browse/indicators>

⁴ <http://www.globalchange.gov/about/highlights/2014-Developing-Indicators-of-Climate-Change>

⁵ <http://www.globalchange.gov/browse/reports/national-climate-assessment-physical-climate-indicators-workshop-report>

⁶ <https://www3.epa.gov/climatechange/pdfs/CI-technical-documentation-2012.pdf>

Indicators that are likely to be of use only to the scientific research community are not appropriate for this solicitation.

- (5) Have clear prospects for continued updates without support from CPO programs, i.e., indicators are composed of/dependent upon readily available and routinely updated public data.

Transition Plan

Investigators are expected to work with the USGCRP Indicators working group and its technical partners to plan how successful indicators can be transitioned into the operational system. This will include making available data and any scripts to the technical team responsible for development of the indicator system -- standards will be collaboratively determined once projects are funded. Proposals should include an outline of a transition plan section, including:

- Documentation of the data and metadata formats;
- Availability of the data on which the indicators will rely;
- Expected scope and types of indicators to result from the project;
- The readiness of indicators for deployment in the indicator system (whether currently in the research, development, or demonstration phase);
- Proposed post-project update procedures; and
- Detail regarding scripts and data products that will be transitioned to the technical coordinating team to enable continued updating of the indicators after the project concludes.

Preference will be given for open-standard and machine readable data that will lend itself to routine access and updating.

Data Management Guidance for FY2017 COM Competitions proposal submission

- Proposals must include a Data Management Plan of up to two pages aligned with the following Data Management Guidance:
 - **Responsible NOAA Official:** For questions regarding this guidance and for verifying accessibility of data produced by funding recipients: Jennifer Saleem Arrigo (jennifer.saleemarrigo@noaa.gov, 301-427-2488)
 - **Data Accessibility:** The Climate Monitoring Program requires that public access to grant/contract-produced data be enabled in one of the following ways:
 - Funding recipients may submit data to NOAA National Centers for Environmental Information (NCEI), which will provide public access and permanent archiving.

- Data can be submitted to a public data repository appropriate to this scientific domain--describe in proposal. (Options could include Dryad, Figshare, DataVerse, Pangaea, etc)
- Funding recipients can establish their own data hosting capability (describe in proposal).
- **Technical recommendations:** The NOAA Program is not offering specific technical guidance. Proposals are to describe their proposed approach. Use of open-standard formats and methods is encouraged.
- **Resources:** Proposals are permitted to include the costs of data sharing or archiving in their budgets.

General Guidelines for FY2017 COM Competitions proposal submission

- Principal Investigators submitting a proposal in response to this COM announcement are required to follow the Letters of Intent and Proposal preparation and submission guidelines described in the Climate Program Office FY2017 Federal Funding Opportunity announcement.
- Investigators are strongly encouraged to submit a Letter of Intent prior to developing and submitting a full proposal. Letters of Intent should be sent to the Competition Manager, Jennifer Saleem Arrigo (jennifer.saleemarrigo@noaa.gov).
- Administrative questions regarding the Federal Funding Opportunity (e. g. proposal formatting or submission guidelines) should be directed to Diane Brown (diane.brown@noaa.gov)
- Questions regarding details of the solicitation should be directed to Jennifer Saleem Arrigo (jennifer.saleemarrigo@noaa.gov).